

REMARKS

Claims 1-20 are pending herein.

I. The claim rejections based on Hirai (US 6,846,074) in view of Young (US 6,561,640).

The USPTO respectfully rejects Claims 1-20 under 35 U.S.C. § 103(a) as being obvious over Hirai in view of Young. Of these, claims 1, 8, and 15 are independent claims.

A. The Hirai reference should be removed as a prior art reference because it and the present application are commonly owned.

The assignee of the present application is Konica Minolta Holdings, Inc. Applicants respectfully submit a statement from Dr. Fumio Ishii of Konica Minolta from another Konica Minolta case (see attached) that states in relevant part:

“The assignee of Hirai, US Patent 6,846,074 is Konica Corporation which was merged with Minolta Co. Ltd. to form Konica Minolta Holdings; Inc. The merger was done on August 5, 2003. Therefore, there was common ownership and/or an obligation to assign the present application to a common owner at the time the present invention was made (see MPEP 706.02(1)(2) II (see page 700-54 in the MPEP)).”

Therefore, according to 35 U.S.C. §§ 102(e), 103(a), 103(c)(1) and MPEP 706.02(1)(2)(II) “EVIDENCE REQUIRED TO ESTABLISH COMMON OWNERSHIP,” the Hirai reference should be removed.

Thus, the rejections are traversed and all of the claims are respectfully asserted to be allowable.

B. The cited references do not teach or suggest that the quantity of ultraviolet rays emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium is set to be larger than the quantity emitted from the other ultraviolet ray irradiating devices, as claimed in claim 1.

Regarding the limitations of claim 1 that claim in relevant part:

“wherein a **quantity** of the ultraviolet ray emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium, in the plurality of pairs, is set to be larger than that of the

ultraviolet rays emitted from the ultraviolet ray source or the ultraviolet ray sources of the other ultraviolet ray irradiating device or each of the other ultraviolet ray irradiating devices.” (**emphasis added**)

it is respectfully not seen where the cited references teach or suggest the claimed structural limitations quoted above.

Specifically, as the USPTO respectfully notes on page 3 of the Office Action, Hirai fails to teach or suggest that the quantity of ultraviolet rays emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium is set to be larger than that of other sources. The USPTO respectfully attempts to overcome this deficiency in Hirai by citing column 4, lines 50-60 of Young.

However, Young does not appear to teach or suggest varying the quantity of ultraviolet rays emitted from a source. Instead, the cited portion of Young only broadly mentions “selecting . . . one or more operating wavelengths of . . . one or more light emitting devices.” However, selecting the operating wavelength of a light-emitting device is respectfully unrelated to the quantity of rays emitted from that device.

It is respectfully noted that the quantity of emitted rays is in no way dependent on or related to the wavelength. For example, two different devices can emit different quantities of ultraviolet rays at the same wavelength, or two different devices can emit the same quantity of rays at different wavelengths. Thus, the fact that Young briefly mentions selecting an operating wavelength in no way teaches or suggests that the quantity of ultraviolet rays emitted from the most downstream ultraviolet ray source is larger than the quantity emitted from the other ray sources, as claimed in claim 1.

Furthermore, Young respectfully does not teach or suggest overstriking of ink, i.e. jetting an ink, curing the jetted ink, jetting another ink on the cured ink, and further curing, as in inherent in the specifically claimed apparatus.

In contrast, present Figures 2 illustrates one possible embodiment of the claimed structure quoted above. As seen in present Figure 2, an image recording section 2 can comprise four pairs, with each pair comprising a recording head 8 and a UV irradiating device 10. According to present Figure 2, the recording medium feeding direction is X, so the most

downstream UV irradiating device is the furthest left device, i.e. the one paired with the recording head marked Y.

Furthermore, as explained on pages 18-19 of the present specification, the most downstream irradiating device 11 is configured to emit a **larger quantity of UV rays than the other irradiating devices.** This is done, for example, by increasing the number of UV ray sources 11 in the most downstream irradiating device, as explained on page 19 of the present specification. In contrast, there is no indication in Young that the most downstream UV light emitting device subsystem, such as subsystem 150 in Figure 2 of Young, contains more UV ray sources or otherwise emits a larger quantity of UV rays than the other subsystem 140.

The specifically claimed structure of claim 1 is important and non-trivial because it provides **inherent critical advantages** over conventional structures. For example, configuring the recording heads and UV irradiating devices as specifically claimed in claim 1 allows one to reduce electric power consumption of the device.

Specifically, as seen in present Figure 2, ejected black ink (from the recording head marked "K") would be irradiated by each of the four downstream irradiating devices, as the recording medium moves in the feeding direction. Similarly, ejected cyan ink would be irradiated by three downstream irradiating devices, ejected magenta ink would be irradiated by two downstream devices, and ejected yellow ink would be irradiated by a single downstream irradiation device.

Thus, because only a single device irradiates the yellow ink, it requires a larger quantity of rays from that single device than that required by the other color inks. Accordingly, in order to completely cure the ejected yellow ink, it is necessary for the most downstream irradiating device by itself to emit a quantity of UV rays sufficient to cure the ink ejected from the most downstream recording head. In contrast, multiple irradiating devices cure ink ejected from the upstream recording heads, so these inks are cured by the cumulative quantity of UV rays from each device.

It is respectfully noted that it is possible for all the irradiating devices to emit sufficient quantities of UV rays to completely cure each type of ink. However, this would require a **large amount of electric power consumption** and would **seriously increase the load on the**

device. Accordingly, a device using the specifically claimed structure of claim 1 can cure all of the inks completely without significantly increasing the electric power consumption of the device.

In summary, Young respectfully does not teach or suggest the quantity of UV rays emitted by the most downstream irradiating device is larger than the quantity emitted by the other irradiating devices. Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach all the claimed limitations of claim 1. Therefore, it is respectfully asserted that claim 1 is not obvious over the cited references.

C. The cited references do not teach or suggest that the intensity of ultraviolet rays emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium is set to be larger than the intensity emitted from the other ultraviolet ray irradiating devices, as claimed in claim 8.

Regarding the limitations of claim 8 that claim in relevant part:

“wherein **intensity** of the ultraviolet ray emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium, in the plurality of pairs, is set to be larger than that of the ultraviolet rays emitted from the ultraviolet ray source or the ultraviolet ray sources of the other ultraviolet ray irradiating device or each of the other ultraviolet ray irradiating devices,” (**emphasis added**)

it is respectfully not seen where the cited references teach or suggest the claimed structure quoted above.

It is respectfully noted that intensity of light is commonly understood to be related to the quantity of light rays emitted. Specifically, light intensity is a type of flux density measurement; in other words, intensity is proportional to the quantity of emitted rays per unit solid angle or surface area.

As noted above, it is respectfully asserted that the cited references do not teach or suggest that the most downstream irradiating device emits a larger quantity of rays than the other irradiating devices. Therefore, by virtue of the relationship between quantity and intensity, it respectfully follows logically that the cited references do not teach or suggest that the most downstream irradiating device emits UV rays at a larger intensity than the other irradiating devices, as claimed in claim 8.

D. The cited references do not teach or suggest that the wavelength of ultraviolet rays emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium is set to be larger than the wavelength emitted from the other ultraviolet ray irradiating devices, as claimed in claim 15.

Regarding the limitations of claim 15 that claim in relevant part:

“wherein the ultraviolet rays emitted from the ultraviolet ray source or the ultraviolet ray sources of the ultraviolet ray irradiating device, which is arranged on the most downstream side in the feeding direction of the recording medium, in the plurality of pairs, has a **longer wavelength** or more longer wavelength components than a wavelength or longer wavelength components of the ultraviolet rays emitted from the ultraviolet ray source or the ultraviolet ray sources of the other ultraviolet ray irradiating device or each of the other ultraviolet ray irradiating devices,” (**emphasis added**)

it is respectfully not seen where the cited references teach or suggest the claimed structure quoted above.

Specifically, as the USPTO respectfully admits on page 3 of the Office Action, Hirai fails to teach or suggest that the wavelength of ultraviolet rays emitted from the ultraviolet ray source arranged on the most downstream side in the feeding direction of the recording medium is set to be longer than the wavelength of UV rays emitted the other irradiating devices. The USPTO respectfully attempts to overcome this deficiency in Hirai by citing column 4, lines 50-60 of Young.

Regarding Young, Young merely appears to disclose that properly selecting the operating wavelength(s) of the one or more light emitting devices will control the effectiveness of the exposure in curing the substance. However, Young does not disclose overstriking of ink, i.e., jetting an ink, curing the jetted ink, further jetting another ink on the cured ink, and further curing, as is **inherent** in claim 15.

Furthermore, as the USPTO respectfully notes on page 4 of the Office Action, Young only discloses that the wavelength of the devices can be selected. Young does not appear to disclose any particular relation between the wavelength of light emitted by the most downstream irradiation device and the light emitted by the other irradiation devices. In contrast, claim 15 specifically claims that the UV rays emitted by the most downstream

irradiation device has a longer wavelength than the UV rays emitted by the other irradiation devices.

In contrast, in a device that employs overstriking of the ink, such as the specifically claimed apparatus of claim 15, in order to cure both the inside of ink droplets on the recording medium as well as the outer layers of the ink, the device requires at least the specifically claimed features of claim 15.

More specifically, when using overstriking of ink, the ink droplets form with a certain depth. As noted on page 17 of the present specification, curing of the interior of ink droplet requires UV rays of longer wavelength. Consequently, when the UV rays emitted by the most downstream irradiation device have a longer wavelength than the rays emitted by the other devices, as specifically claimed in claim 15, the ink on the recording medium can be cured well at all depths.

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all the limitations of claim 15. Therefore, it is further respectfully asserted that claim 15 is not obvious over the cited references.

E. The dependent claims.

As noted above, it is respectfully asserted that independent claims 1, 8, and 15 are allowable. Therefore, it is further respectfully asserted that dependent claims 2-7, 9-14, and 16-20 are also allowable.

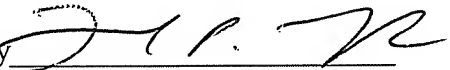
II. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

By 

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2. Argument

Please prove that Hirai and the present application have now a common ownership. The statement described in page 2 of your letter of June 15, 2006 was slightly changed by reciting full names of "Konica Minolta Holdings, Inc." and "Minolta Co. Ltd" as follows:

"The present assignee, Konica Minolta Medical & Graphic Inc., is a wholly owned subsidiary of Konica Minolta Holdings, Inc. The assignee of Hirai, US Patent 6,846,074 is Konica Corporation which was merged with Minolta Co. Ltd to form Konica Minolta Holdings, Inc. The merger was done on August 5, 2003. Therefore, there was common ownership and/or an obligation to assign the present application to a common owner at the time the present invention was made (see MPEP 706.02(1)(2)II.)"

If you need any documents which should be prepared in our side, please instruct us.

After removal of Hirai from the Reference, the claim rejection by the Examiner should be invalid. As a result, we believe that the present claims would be allowable.

Sincerely,



Fumio ISHII

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